

### Abstract of Disclosure

5 An apparatus and method for processing AAL2 supporting multiple virtual channels in a mobile communication system is disclosed. The present invention includes transmitting part including a first memory for storing ATM cells having the same destination according to corresponding destination information, where the transmitting part multiplexes user data items transmitted from a plurality of AAL2 users into one ATM cell according to corresponding destination information and transfers it to the ATM layer; and a receiving part including a second memory for storing mini-cells having destinations by users according to corresponding destination information, where the receiving part demultiplexes each ATM cell transmitted from the ATM layer to deconstruct it into mini-cells by users according to corresponding destinations and transmits them to corresponding AAL2 users. Accordingly, the accommodation capacity of the communication system increases and transmission rate rises, providing stable communication service.